

Mechanism of auxin perception by the TIR1 ubiquitin ligase

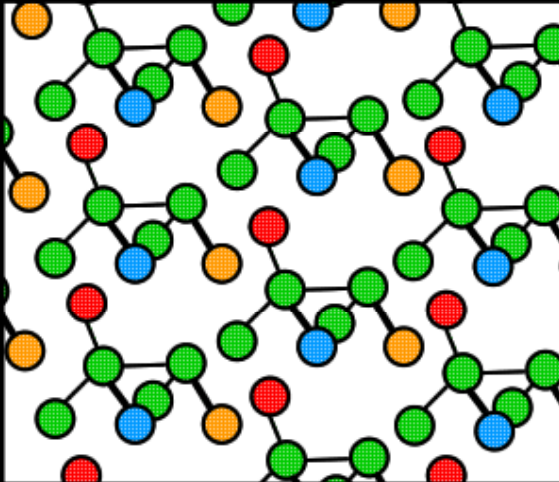
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vorgestellt von
Maria Giebler & Katrin Rietscher

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(articles, news & views, supplementary
information)

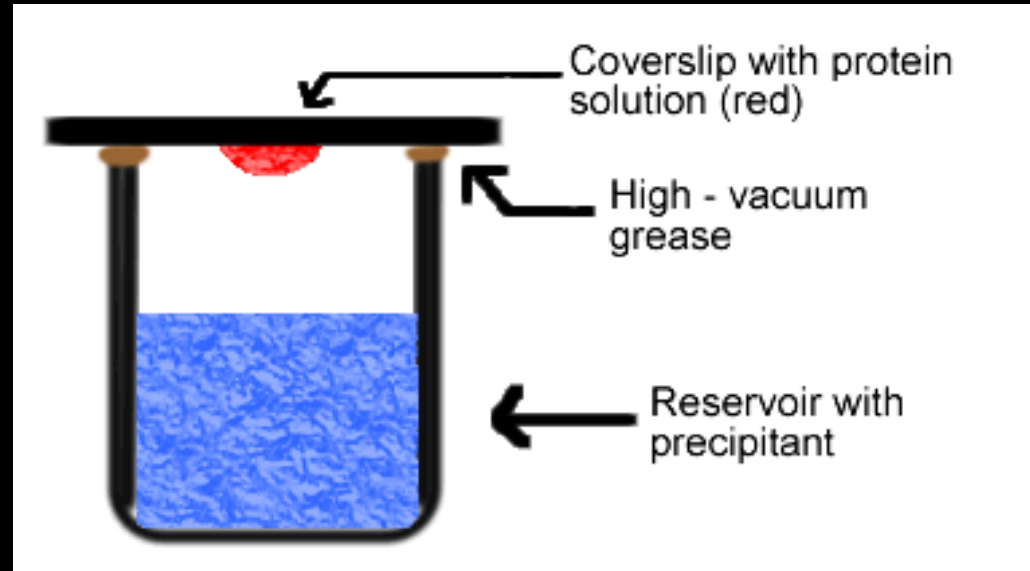
Proteinkristallisation :



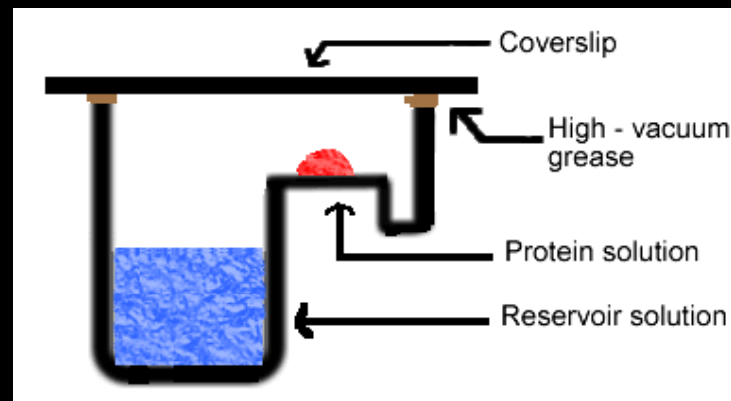
Proteinkristall

Vapor diffusion :

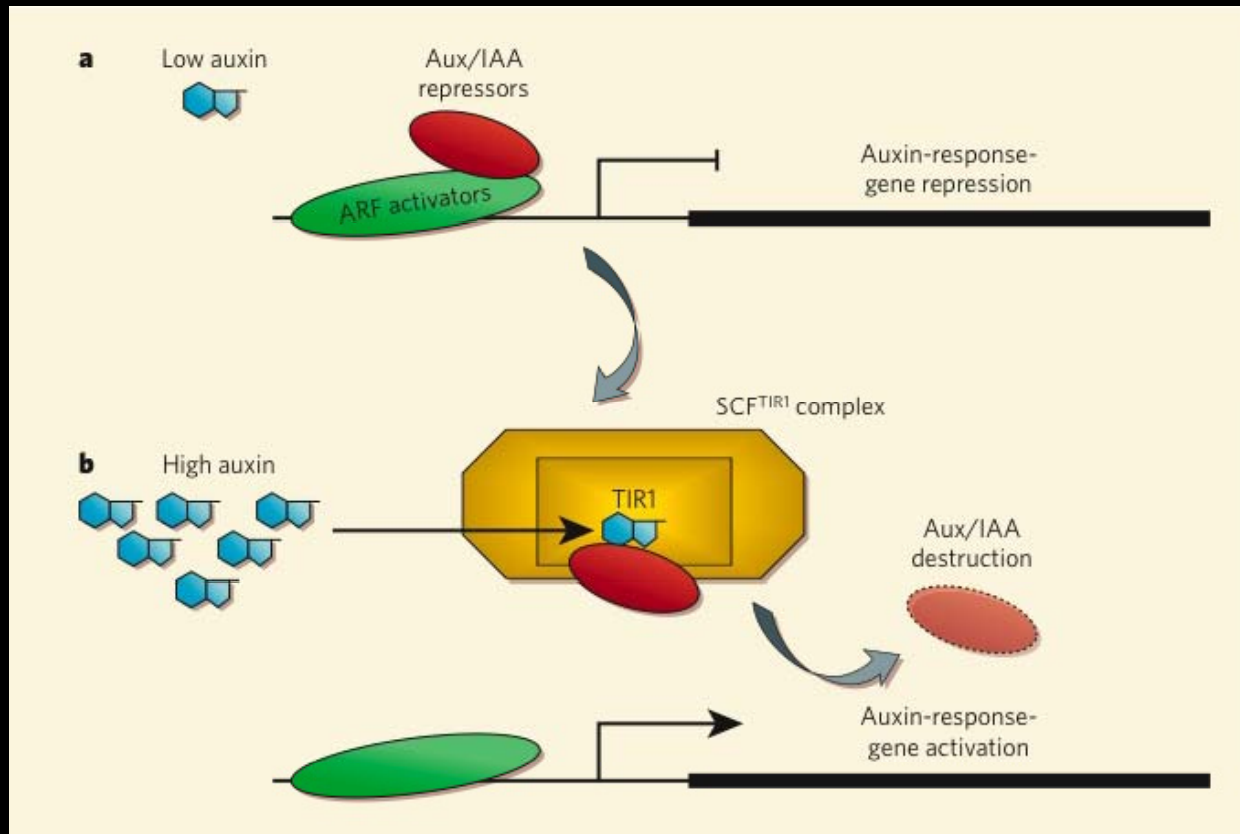
hanging-drop



sitting-drop

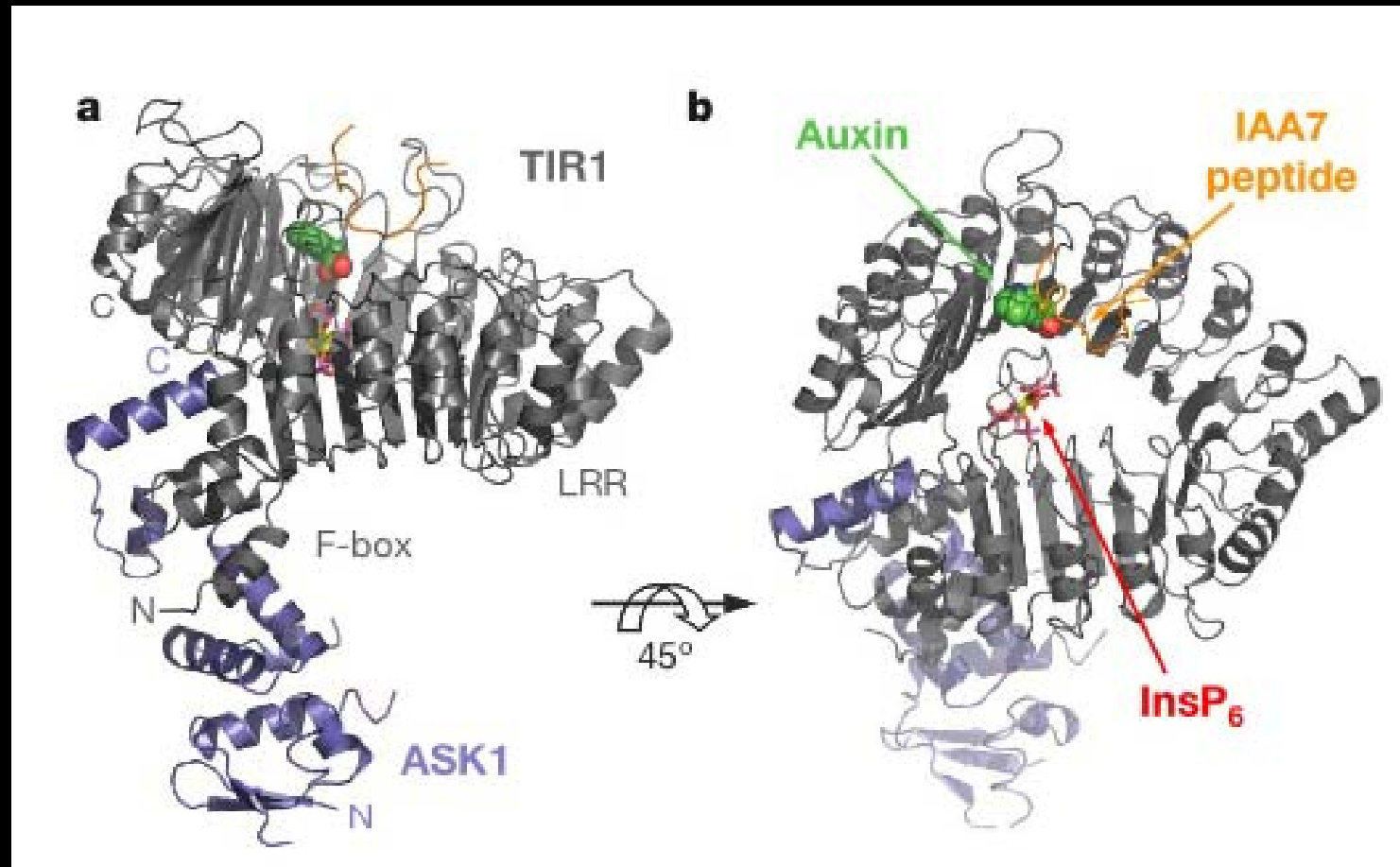


The auxin signalling pathway :



Was wurde untersucht ?

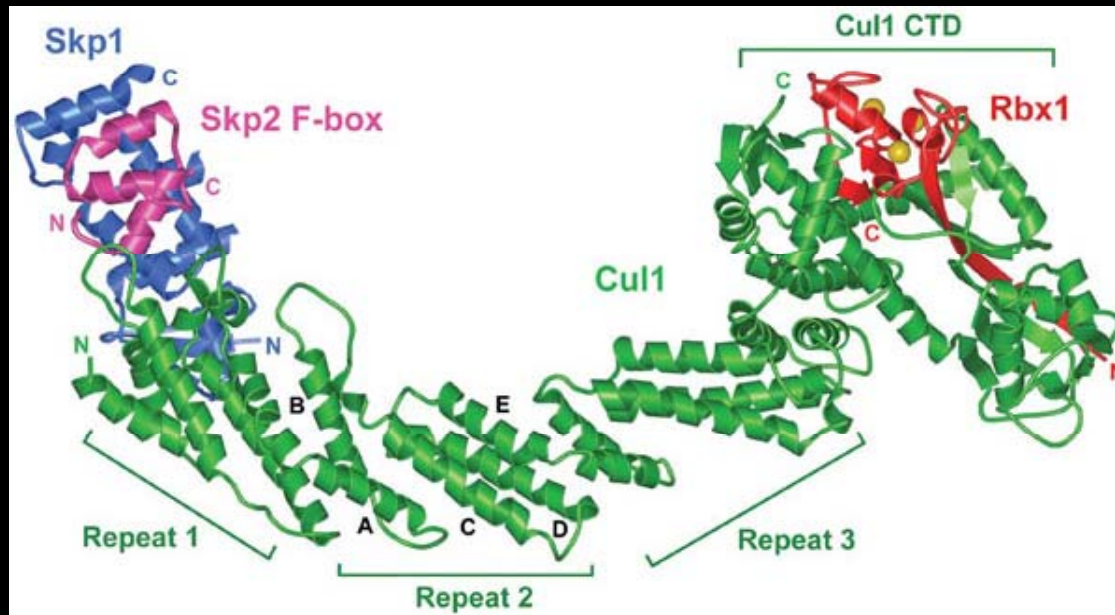
-> Kristallstruktur des Arabidopsis TIR1-ASK1-Komplexes allein und im Komplex mit den drei Auxinkomponenten und dem Aux/IAA Substratpeptid



Crystal structure of the TIR1-ASK1 complex with auxin and the IAA7 degron peptide

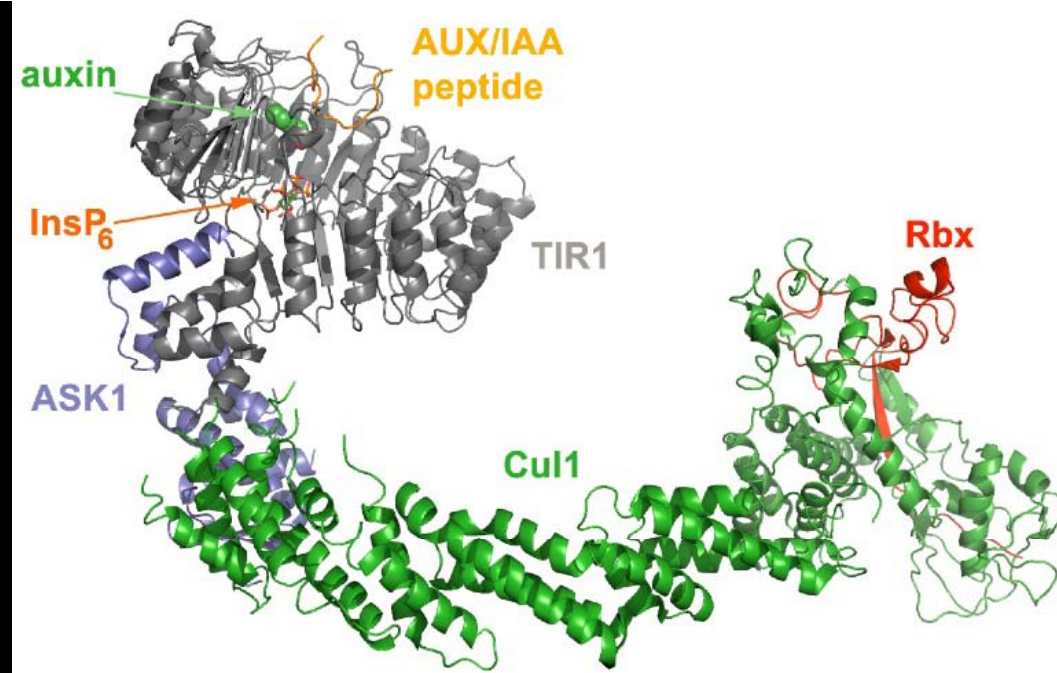
- LRR = leucine-rich-repeats
- InsP₆ = inositol hexakisphosphate

Overall structure of the Cul1-Rbx1-Skp1-F box^{Skp2} quaternary complex :

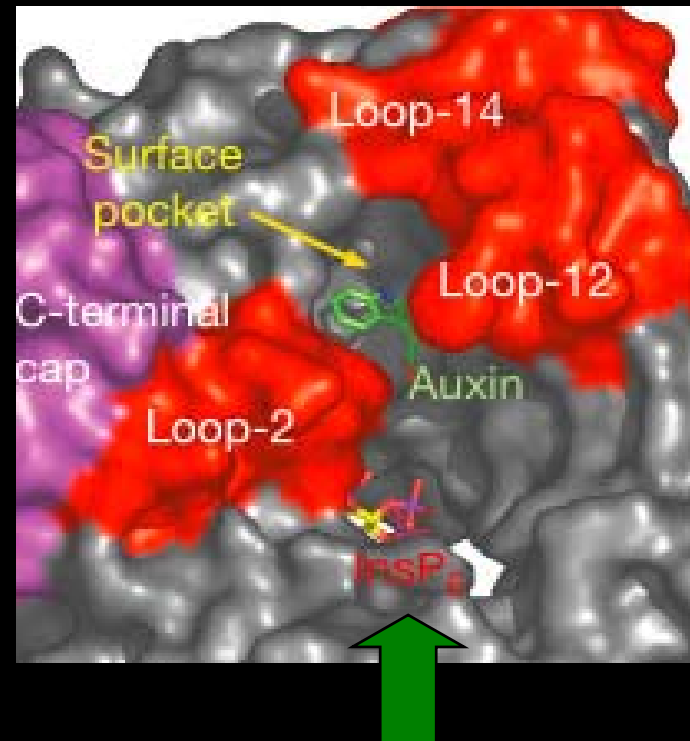
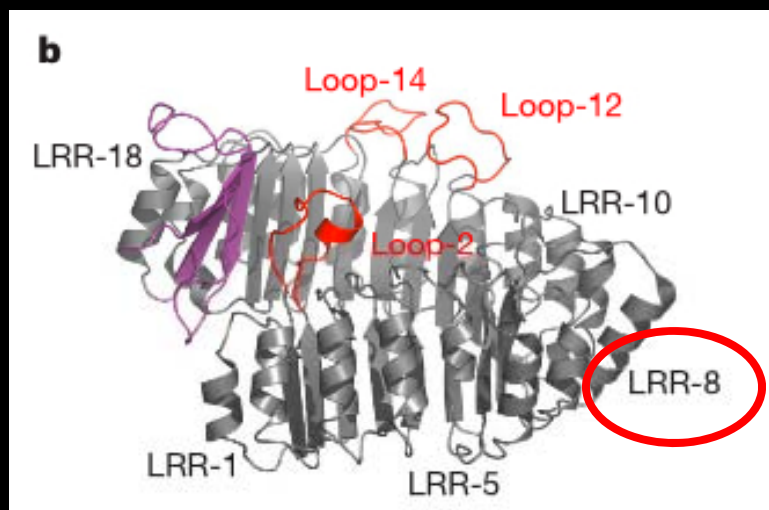
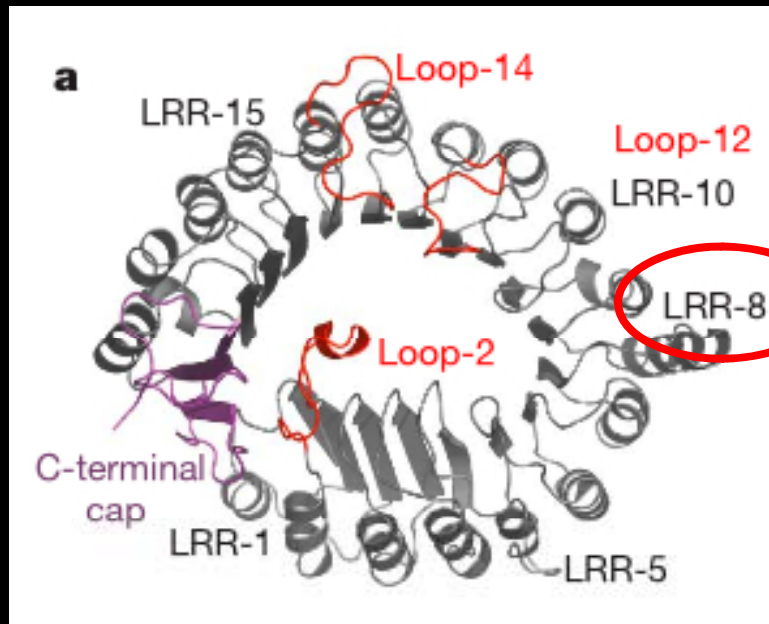


The human Cul1-Rbx1 complex

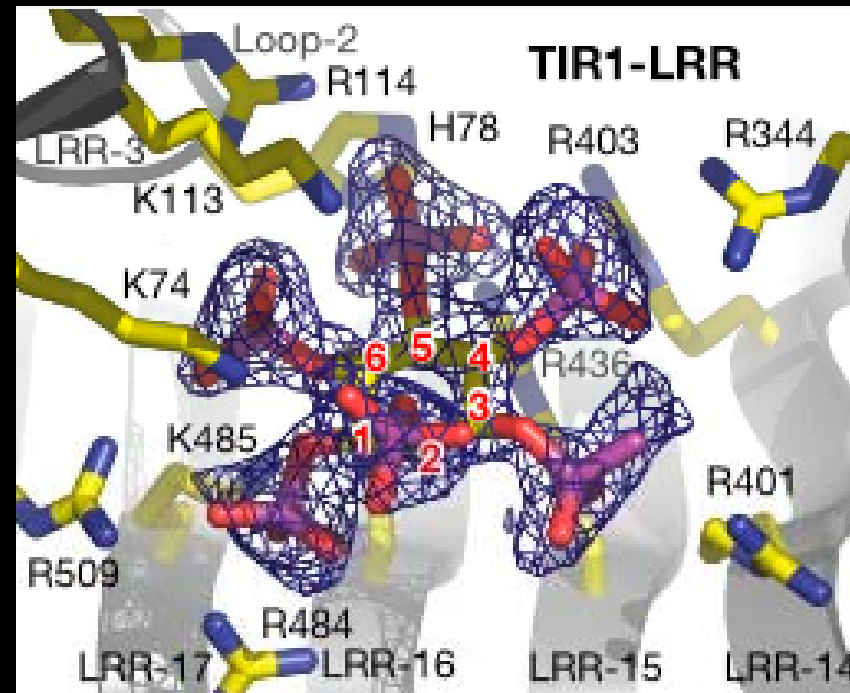
The Arabidopsis TIR1-ASK1-auxin-IAA7 peptide complex



Architecture of the TIR1-LRR domain

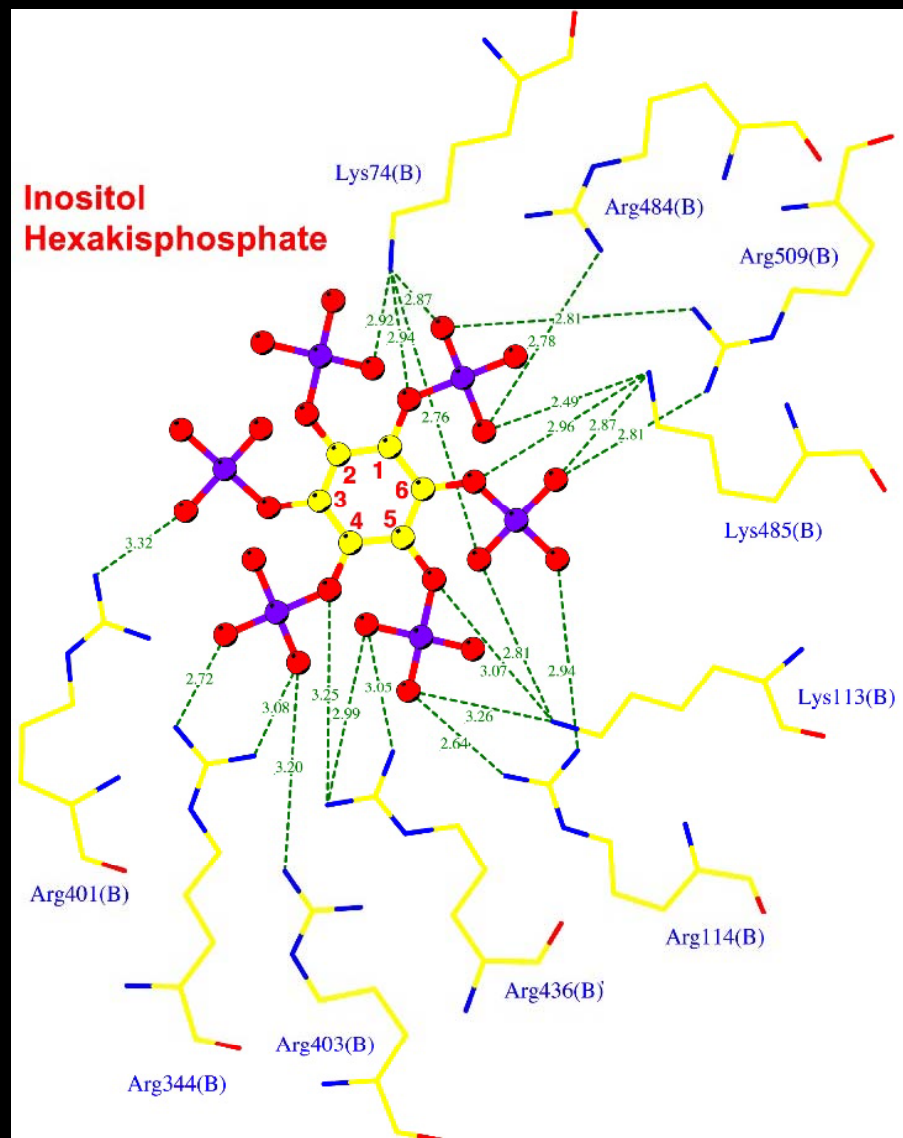


Identification of InsP_6 in TIR1 :

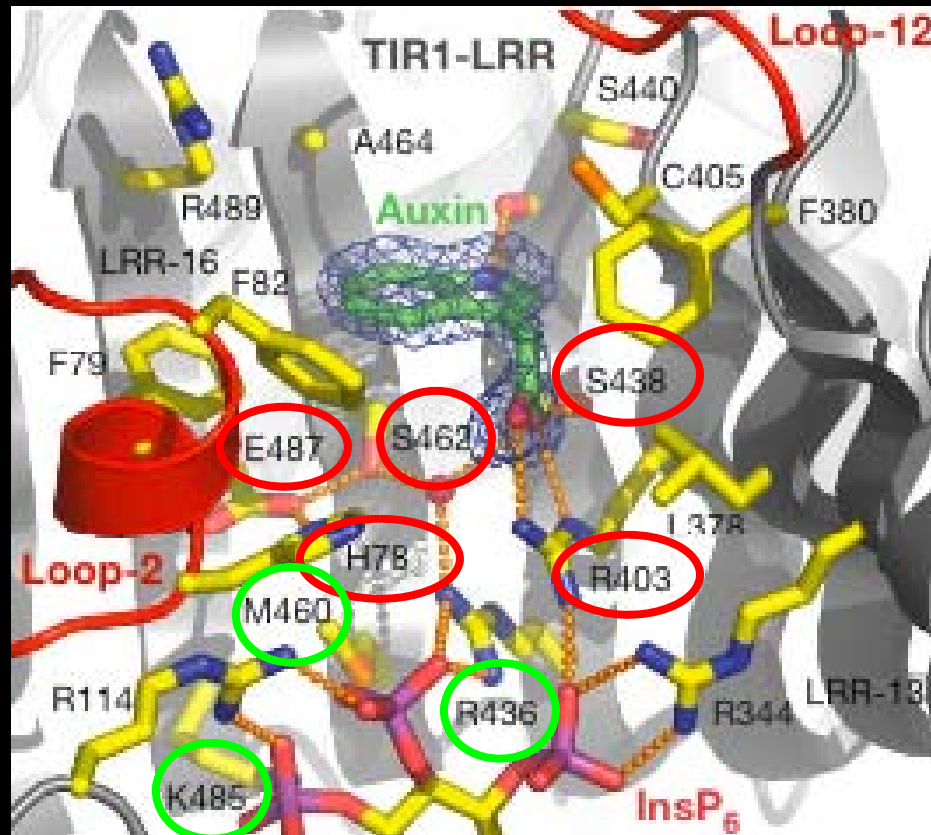


InsP_6 as a TIR1 co-factor

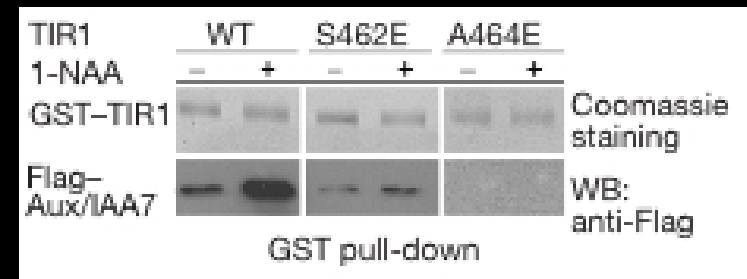
Interactions between InsP₆ and surrounding basic residues of TIR1



The TIR1 auxin-binding pocket

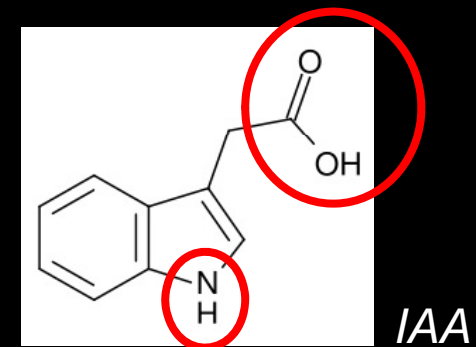
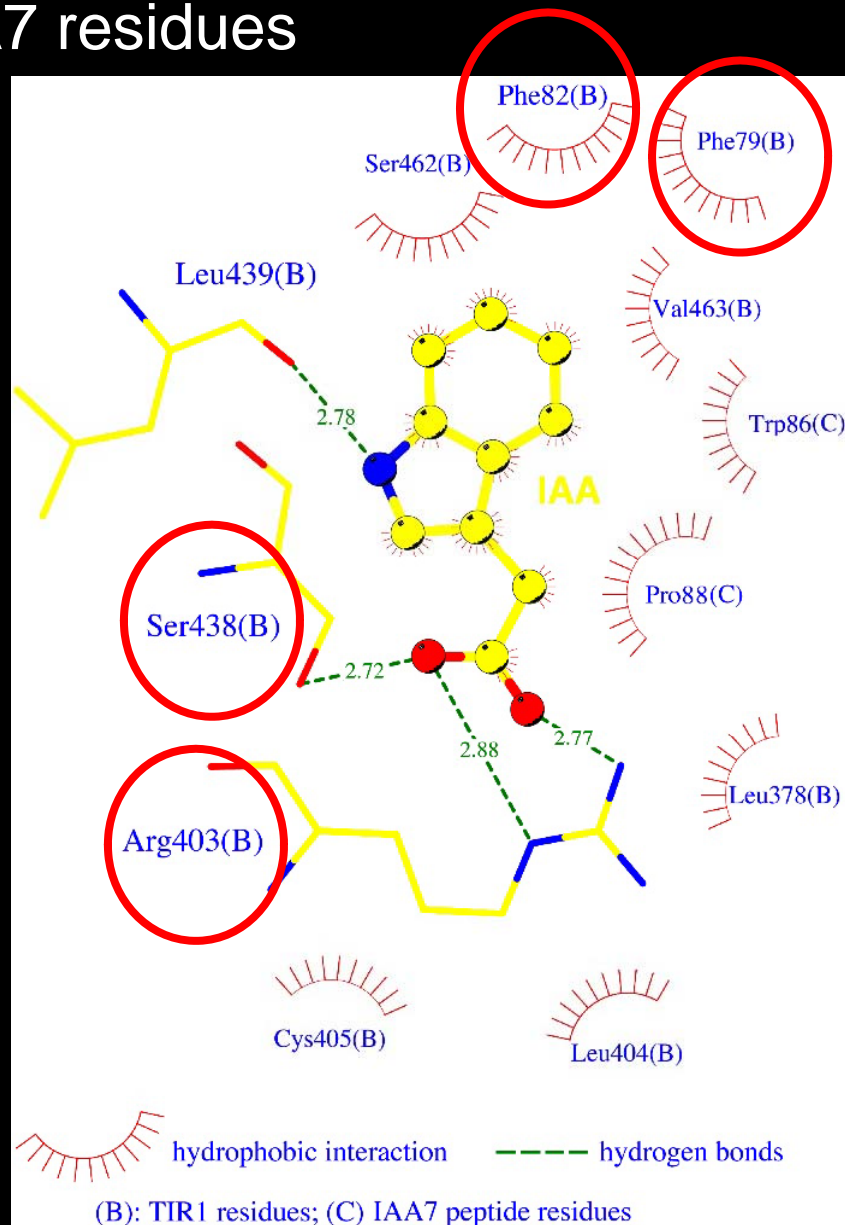


Recognition of auxin by TIR1



GST pull-down assay with (+) or without (-) 50 μ M 1-NAA

Interactions between auxin and surrounding TIR1 and IAA7 residues

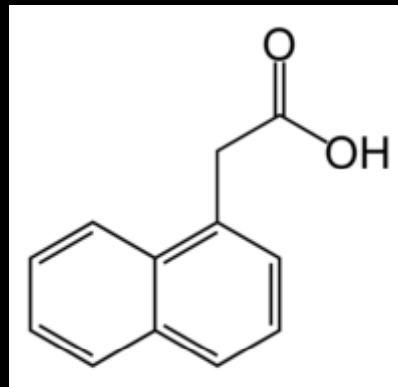


Auxin bindet direkt an TIR1

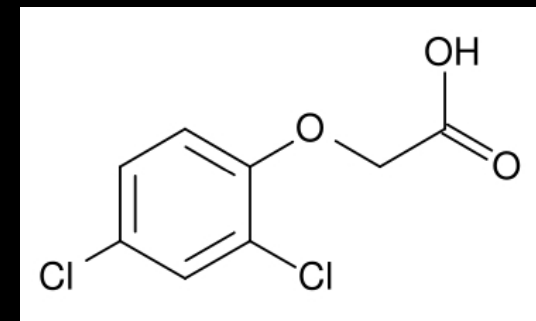
Binding of synthetic auxin analogues to TIR1



Indol-3-yl-essigsäure

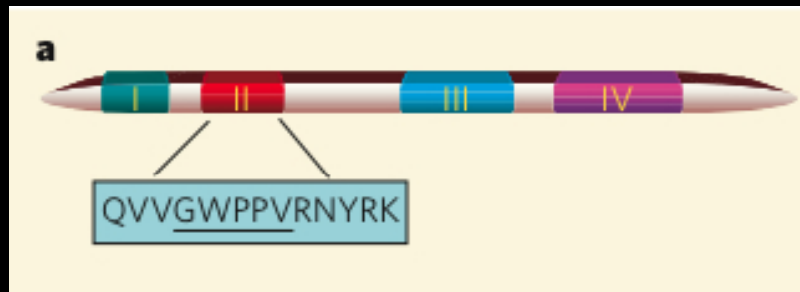


1-Naphthyl-essigsäure

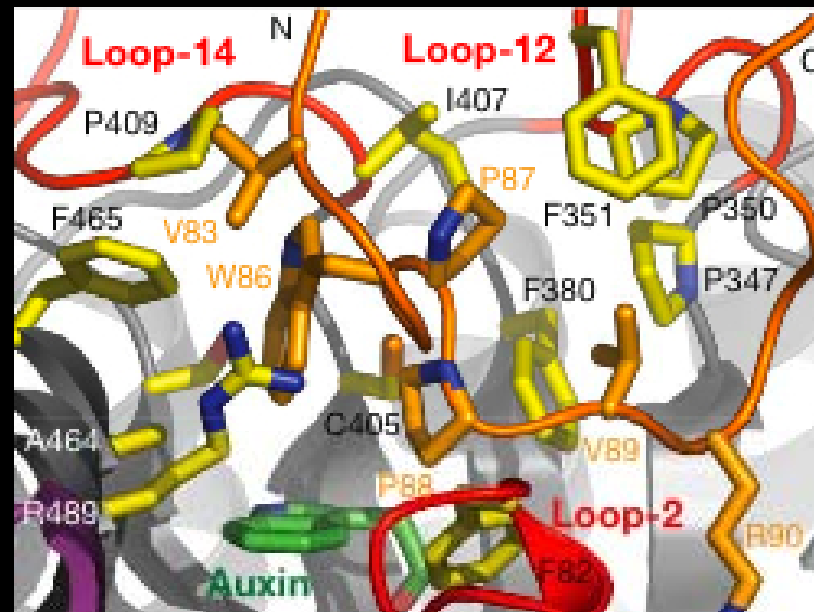
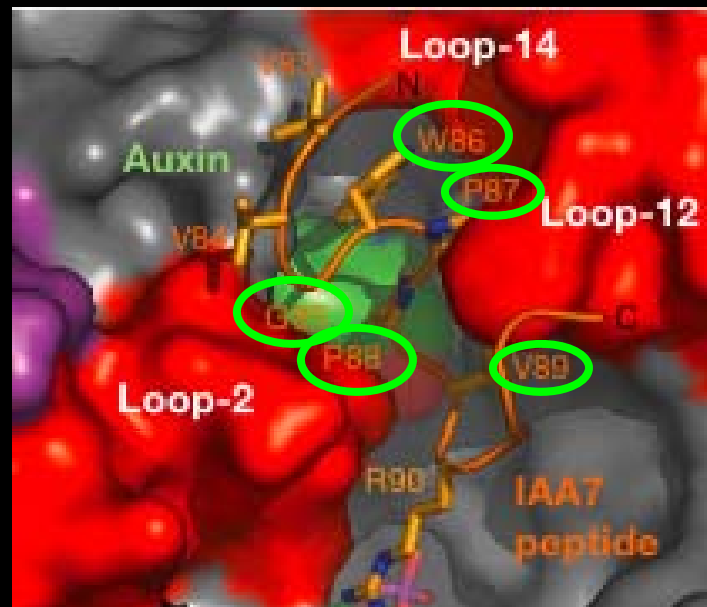


2,4-Dichlorphenoxyessigsäure

TIR1-substrate peptide interactions:



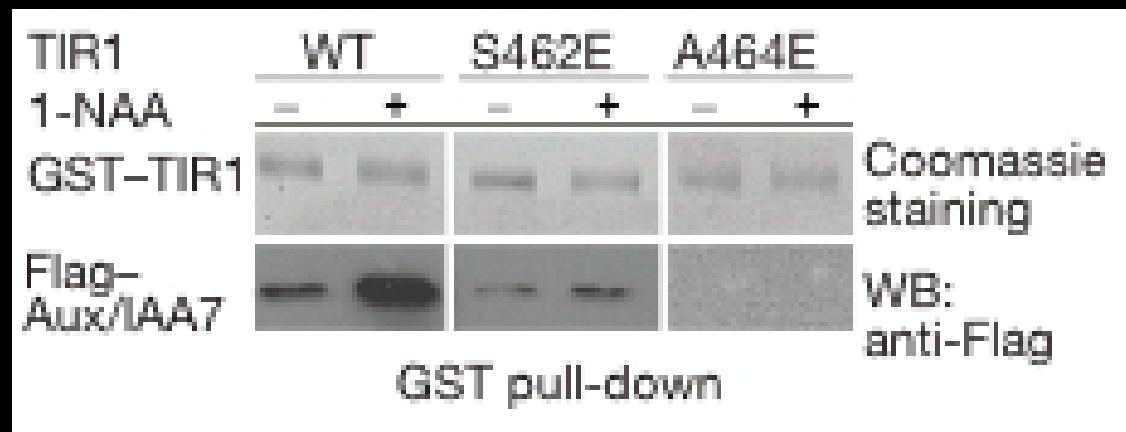
Gly-Trp-Pro-Pro-Val

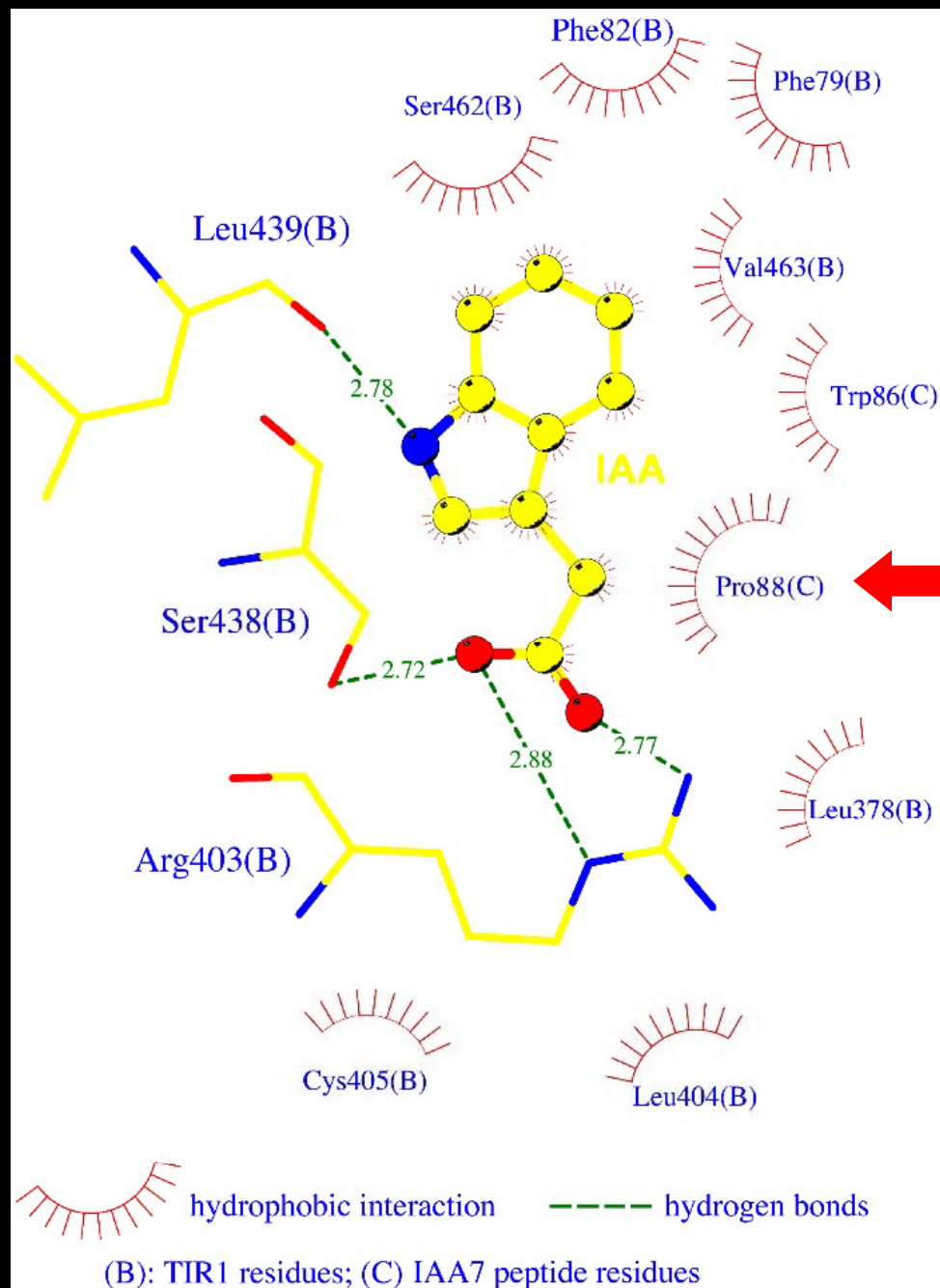


Binding of an Aux/IAA degron peptide on auxin-bound TIR1

Pull-down assay :

-> *keine Bindung TIR1-Aux/IAA nach Mutation von hydrophoben Aminosäure*

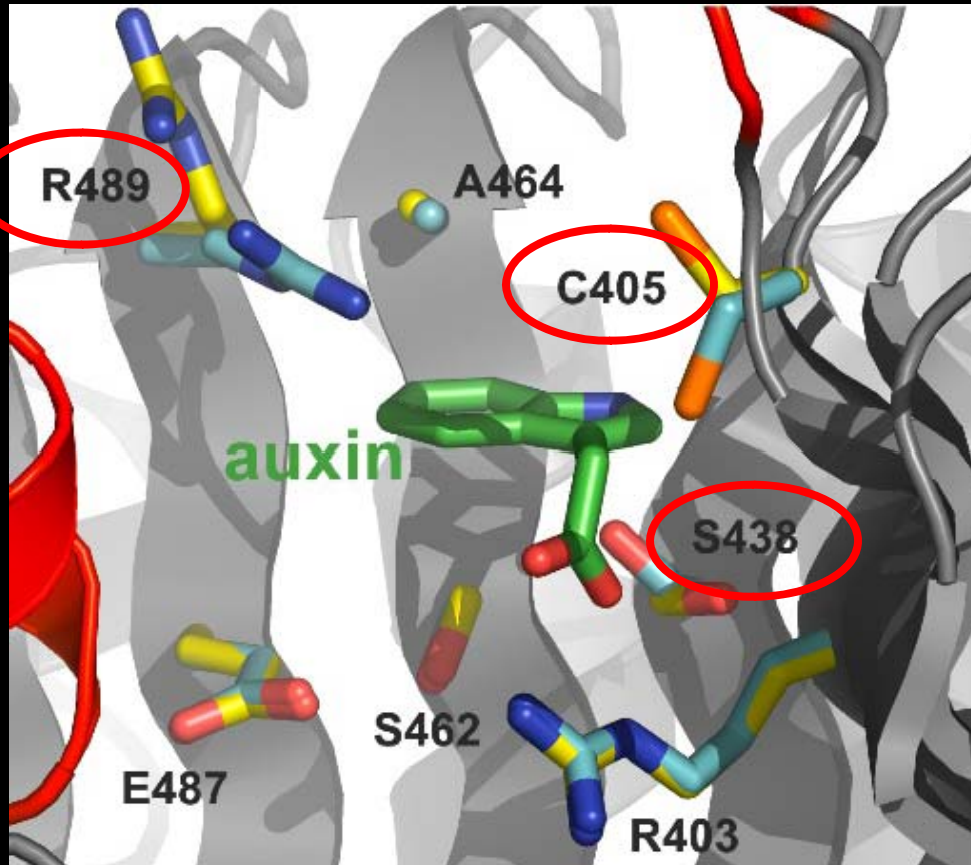






Sequence alignment of Arabidopsis TIR1, AFB1-5, and COI1 with annotated structural elements

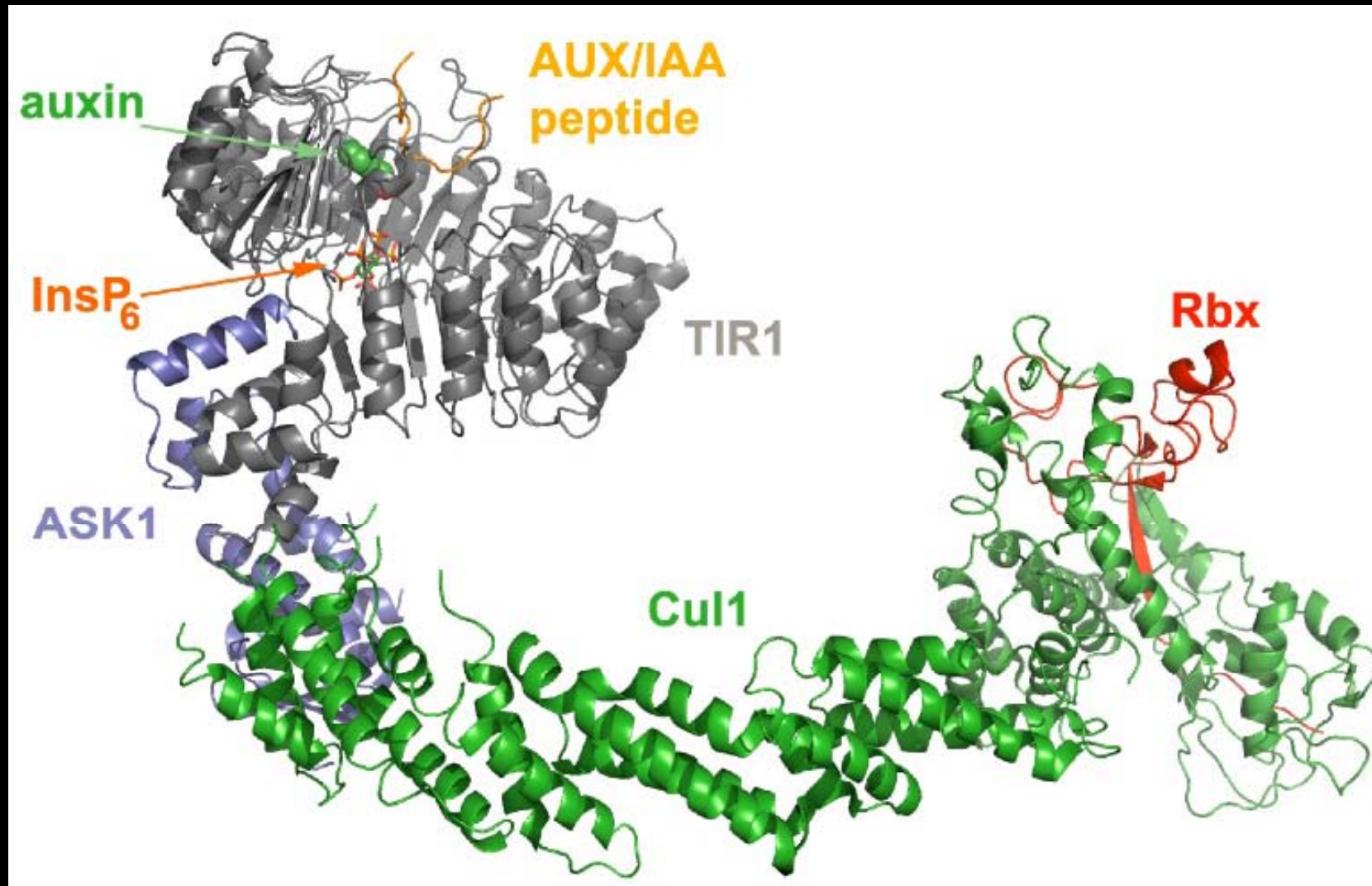
Optimierung der Bindungstasche :



- mit Auxin: gelb

- ohne Auxin: cyan

A model of SCF^{TIR1} in complex with auxin and an Aux/IAA substrate peptide



*Vielen Dank für eure
Aufmerksamkeit !*